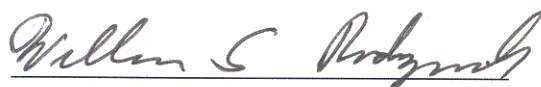


CRITERION 407

EMERGENCY EYEWASH AND SHOWER EQUIPMENT

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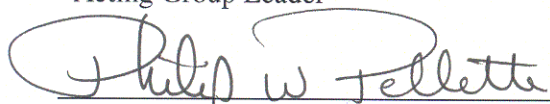
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RECORD OF REVISIONS

Revision No.	Date	Description
0	12/17/98	Initial Issue
1	12/06/02	Revision incorporating ANSI Z358.1-1998 Standard for Emergency Eyewash and Shower Equipment and formatting based on 101 Criterion Writer's Guide Rev. 3.

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CRITERION 407

EMERGENCY EYEWASH AND SHOWER EQUIPMENT

1.0 PURPOSE

The purpose of this Criterion is to establish the minimum requirements and best practices for operation and maintenance of Emergency Eyewash and Shower Equipment at LANL.

This document addresses the requirements of LIR 230-05-01(Ref 10.1), "Operations and Maintenance Manual."

Implementation of this Criterion satisfies DOE Order 430.1A (Ref 10.2) for the subject equipment / system. DOE Order 430.1A (Ref 10.2) "Life Cycle Asset Management," Attachment 2 "Contractor Requirements Document," Paragraph 2, Sections A through C, which in part requires UC to "...maintain physical assets in a condition suitable for their intended purpose," and employ "preventive, predictive, and corrective maintenance to ensure physical asset availability for planned use and/or proper disposition." Compliance with DOE Order 430.1A is required by Appendix G of the UC Contract.

2.0 SCOPE

The scope of this Criterion includes the operation, inspection, testing and preventive maintenance of Emergency eyewash and shower equipment. This Criterion does not address corrective maintenance actions required to repair or replace equipment.

3.0 ACRONYMS AND DEFINITIONS

3.1 Acronyms

AHJ	Authority Having Jurisdiction
ANSI	American National Standards Institute
CCB	Change Control Board
CFR	Code of Federal Regulations
DOE	Department of Energy

LIG	Laboratory Implementing Guidance
LIR	Laboratory Implementing Requirement
LPR	Laboratory Performance Requirement
O&M	Operations and Maintenance
PPE	Personal Protective Equipment
PP&PE	Personal Property and Programmatic Equipment
RP&IE	Real Property and Installed Equipment
SSC	Structures, Systems, and Components
SSS	Support Services Subcontractor
UC	University of California
WSS	Work Smart Standards

3.2 Definitions

Bump Test. A momentary activation (on/off) of an eyewash activation lever to verify flow.

Combination Unit. A unit combining a shower with an eyewash or eye/face wash, or a drench hose, or with both, into one common assembly.

Emergency Shower. A unit that enables a user to have water cascading over the entire body.

Eye-Face Wash. A device used to irrigate and flush the eyes.

Eyewash. A device used to irrigate and flush the eyes.

Hand-Held Drench Hose. A flexible hose connected to a water supply and used to irrigate and flush eyes, face, and body area.

Plumbed Emergency Equipment. Equipment permanently connected to a source of potable water.

Self-Contained Emergency Equipment. Equipment that contains its own flushing fluid, and must be refilled or replaced after use.

Tepid: Moderately warm; lukewarm.

4.0 RESPONSIBILITIES

4.1 FWO-Systems, Engineering and Maintenance (SEM)

- 4.1.1** FWO-SEM is responsible for the technical content of this Criterion and monitoring the applicability and the implementation status of this Criteria and either assisting the organizations that are not applying or meeting the implementation expectations contained herein or elevating their concerns to the director(s).

Basis: LIR 301-00-01.11 ; Issuing and Managing Laboratory Operations Implementation Requirements and Guidance, Section 5.4, OIC Implementation Requirements.

- 4.1.2** FWO-SEM shall provide technical assistance to support implementation of this Criterion.

4.2 Facility Manager

- 4.2.1** Responsible for operations and maintenance of institutional, or Real Property and Installed Equipment (RP&IE) under their jurisdiction, in accordance with the requirements of this document.

- 4.2.2** Responsible for operations and maintenance of those Personal Property and Programmatic Equipment (PP&PE) systems and equipment addressed by this document that may be assigned to the FM in accordance with the FMU-specific Facility/Tenant Agreement.

4.3 Group Leader

- 4.3.1** Responsible for operations and maintenance of those Personal Property and Programmatic Equipment (PP&PE) systems and equipment addressed by this document that are under their jurisdiction

- 4.3.2** Responsible for system performance analysis and subsequent replacement or refurbishment of assigned PP&PE.

4.4 Authority Having Jurisdiction (AHJ) - POC for Mechanical Chapter of LANL Engineering Manual

- 4.4.1** The AHJ is responsible for providing a decision on a specific technical question regarding this criterion.

4.5 Employees

- 4.5.1** Employees who may be exposed to hazardous materials shall know the location and operation of nearest eyewash/emergency shower.

5.0 PRECAUTIONS AND LIMITATIONS

5.1 Precautions

This section is not intended to identify all applicable precautions necessary for implementation of this Criterion. A compilation of all applicable precautions shall be contained in the implementing procedure(s) or work control authorization documents. The following precautions are intended only to assist the author of a procedure or work control document in the identification of hazards/precautions that may not be immediately obvious.

- 5.1.1** Flowed water generated during test actuation of safety showers/eye washes will need to be disposed of properly in locations with potential contamination.
- 5.1.2** Outdoor eye wash stations with potential for freezing need to comply with O&M Criterion - 401 Freeze Protection.
- 5.1.3** Water temperature at safety showers and eyewash stations should never be more than tepid (lukewarm).

5.2 Limitations

The intent of this Criterion is to identify the minimum generic requirements and recommendations for SSC operation and maintenance across the Laboratory. Each user is responsible for the identification and implementation of additional facility specific requirements and recommendations based on their authorization basis and unique equipment and conditions, (e.g., equipment history, manufacturer warranties, operating environment, vendor O&M requirements and guidance, etc.).

Nuclear facilities and moderate to high hazard non-nuclear facilities will typically have additional facility-specific requirements beyond those presented in this Criterion. Nuclear facilities shall implement the requirements of DOE Order 4330.4B (Ref. 10.3) (or 10 CFR 830.340, Maintenance Management, when issued) as the minimum programmatic requirements for a maintenance program. Additional requirements and recommendations for SSC operation and maintenance may be necessary to fully comply with the current DOE Order or CFR identified above.

6.0 REQUIREMENTS

Minimum requirements that Criterion users shall follow are specified in this section. Requested variances to these requirements shall be prepared and submitted to FWO-SEM in accordance with LIR 301-00-02 (Ref. 10.4), "Variances and Exceptions to Laboratory Operations Requirements," for review and approval. The Criterion users are responsible for analysis of operational performance and SSC replacement or refurbishment based on this analysis. Laws, codes, contractual requirements, engineering judgment, safety matters, and operations and maintenance experience drive the requirements contained in this section.

Requirements for Criterion 407 –Emergency Eyewash and Shower Equipment are based on ISEA/ANSI Z358.1-1998 with the following exceptions/clarifications:

- (a) Tepid requirement applies only to new installations
- (b) No weekly activation requirement (paragraphs 4.6.5, 4.7.2, 5.4.6, 5.5.3, 6.2.5, 7.4.6, 7.5.4, 8.4.4, 8.5.2, 9.4.5 and 9.5.2).

Basis: Approved change to Work Smart Standards (WSS) by Change Control Board (CCB) on 4/23/02.

6.1 Operations Requirements

6.1.1 Activate safety showers yearly to flush lines and verify proper operations.

6.1.2 Activate plumbed eyewash units and eye-face wash units monthly for a minimum of three minutes to prevent build up of any blindness causing bacteria, such as *acanthamoebae*.

Basis: ANSI Z358.1-1998, 4.7.2 and 5.5.2 with LANL exemption on weekly frequency.

6.1.3 Employees who may be exposed to hazardous materials shall be instructed in location and proper use of emergency showers and eyewash units.

Basis ANSI 2358 1-1998, 4.7.3 and 5.5.3
LIR 402-510-01.0, Page 22

6.2 Maintenance Requirements

6.2.1 Inspect and maintain self – contained emergency eyewash units in accordance with manufacturers instructions. Fill units to the level recommended by the manufacturers. Use an additive such as Hydrosep in self –contained eyewash units to prevent buildup of any blindness causing bacteria, such as *acanthamoebae*.

Units that are not in constant use shall be filled immediately prior to the initiation of the operation requiring the units. Drain after each use.

Basis ANSI Z358.1-1998, 5.5.2

- 6.2.2** All eyewash units shall be inspected annually to assure conformance with ANSI Z358.1 Section 5 requirements.

Basis ANSI Z358.1-1998, 5.5.4

- 6.2.3** All shower units shall be inspected annually to assure conformance with ANSI Z358.1-1998.1 section 4 requirements.

Basis ANSI Z358.1-1998, 4.7.4

- 6.2.4** All drench hose units shall be inspected annually to assure conformance with ANSI Z358.1 Section 8 requirements.

Basis ANSI Z358.1-1998, 8.5.4

7.0 RECOMMENDATIONS AND GOOD PRACTICES

The information provided in this section is recommended based on acceptable industry practices and should be implemented by each user based on his/her unique application and operating history of the subject systems/equipment.

7.1 Operations Recommendations

- 7.1.1** Bump test eyewash units and eye-face wash units weekly to verify flow.

7.2 Maintenance Recommendations

- 7.2.1** Individual(s) performing maintenance should be familiar with the recommended supporting information of ANSI Z358.1-1998 and the manufacturer's recommendations.
- 7.2.2** Repair or replace damaged or worn components as soon as possible. Replace spray covers, filters and flow controls as recommended by the manufacturer.
- 7.2.3** Use ANSI approved eyewash tester gauges to verify that the flow pattern is correct.

8.0 GUIDANCE**8.1 Operations Guidance**

8.1.1 No Operations Guidance

8.2 Maintenance Guidance

8.2.1 Provided in PMI 40-35-016 9 (Safety Shower Inspection and Testing)

9.0 REQUIRED DOCUMENTATION

Test and Inspection records shall be maintenance to verify ANSI Z358.1-1998 requirements are met.

Table 9-1 Documentation Parameters

MAINTENANCE HISTORY DOCUMENTATION PARAMETERS				
PARAMETER	ML 1	ML 2	ML 3	ML 4
Flow Activation				
Eyewash	X	X	X	X
Safety Shower	X	X	X	X
Annual Inspection				
Inspection Date	X	X	X	X

Basis: Documentation of the parameters listed in Table 9-1 above satisfies the requirements of LPR 230-07-00, Criteria 2, (Ref. 10.5) which states; "Maintenance activities, equipment problems, and inspection and test results are documented."

10.0 REFERENCES

The following references, and associated revisions, were used in the development of this document.

10.1 LIR 230-05-01.0, Operation and Maintenance Manual.

10.2 DOE O 430.1A, Attachment 2 "Contractor Requirements Document" (Paragraph 2, Sections A through C), a requirement of Appendix G of the UC Contract.

- 10.3** DOE Order 4330.4B, Maintenance Management Program, Section 3.4.9.
- 10.4** LIR 301-00-02.0, Variances and Exceptions to Laboratory Operation Requirements.
- 10.5** LPR 230-07-00, Maintenance History, Performance Criteria [2].
- 10.6** ANSI Z358.1-1998, American National Standard for Emergency Eyewash and Shower Equipment

11.0 APPENDICES

None